

Claims

The following listing of claims replaces all prior versions.

Claim 1 (Currently amended) A free-space parallel optical interconnect, comprising:
a first module, comprising:
a first die comprising an array of light sources, each light source emitting light; and
a first common collimating lens for receiving the light directly from each light source and for
directing the light from each light source to a second module; and
the second module comprising:
a second die comprising an array of detectors ; and
a second common collimating lens for directing the light from the light sources directly to
corresponding detectors in the array of detectors.

Claim 2 (Original): The interconnect of claim 1, wherein the array of light sources is selected from the group consisting of an array of vertical cavity surface-emitting lasers (VCSELs), an array of edge-emitting lasers, and an array of light emitting diodes (LEDs).

Claim 3 (Original): The interconnect of claim 1, wherein the light sources are spaced apart by 50 microns.

Claim 4 (Previously Presented): The interconnect of claim 1, wherein:
the first die further comprises another array of detectors; and
the first common collimating lens further directs light from the second module to said another array of detectors.

Claim 5 (Previously Presented): The interconnect of claim 1, wherein the first module further comprises:
a second die comprising another array of detectors; and
the first common collimating lens further directs light from the second module to said another array of detectors.

Claim 6 (Previously Presented): The interconnect of claim 1, wherein the first module further comprises:

a second die comprising another array of detectors; and
a third common collimating lens for directing light from the second module to said another array of detectors.

Claim 7 (Canceled)

Claim 8 (Previously Presented): The interconnect of claim 1, wherein the array of detectors comprises an array of positive-intrinsic-negative (PIN) photodiodes.

Claim 9 (Previously Presented): The interconnect of claim 1, wherein the detectors are spaced apart by 50 microns.

Claim 10 (Previously Presented): The interconnect of claim 1, wherein:
the second die further comprises another array of light sources, each light source emitting light; and
the second common collimating lens further directs the light from said another array of light sources to the first module.

Claim 11 (Previously Presented): The interconnect of claim 1, wherein the second module further comprises:
a third die comprising another array of light sources, each light source emitting light; and
the second common collimating lens further directs the light from said another array of light sources to the first module.

Claim 12 (Previously Presented): The interconnect of claim 1, wherein the second module further comprises:
a third die comprising another array of light sources, each light source emitting light; and
a third common collimating lens for directing the light from said another array of light sources to the first module.

Claim 13 (Currently amended): A method for transmitting data in parallel, comprising:
emitting light from each light source in an array of light sources in a first module, wherein the light from each light source carries data;

receiving the light from each light source directly in a first common collimating lens;
directing the light from each light source with a the first common collimating lens to a second module; and
directing the light from the light sources with a second common collimating lens directly to corresponding detectors in an array of detectors in the second module.

Claim 14 (Previously Presented): The method of claim 13, further comprising:
directing light from the second module with a third common collimating lens to another array of detectors in the first module.

Claim 15 (Previously Presented): The method of claim 13, further comprising:
directing light from the second module with the first common collimating lens to another array of detectors in the first module.

Claim 16 (Canceled)

Claim 17 (Previously Presented): The method of claim 13, further comprising:
emitting light from each light source in another array of light sources in the second module;
and
directing the light from said another array of light sources with a third common collimating lens to the first module.

Claim 18 (Previously Presented): The method of claim 13, further comprising:
emitting light from each light source in another array of light sources in the second module;
and
directing the light from said another array of light sources with the second common collimating lens to the first module.